

## LISTING OF CLAIMS

1. (canceled)
2. (currently amended) The An interface module according to claim ~~[[1]]~~ 4 including a plurality of external ports for connection to respective data communications links, wherein the link interface is connected to each of the external ports for processing said inbound and outbound data.
3. (currently amended) The An interface module according to claim ~~[[1]]~~ 4, wherein the link interface comprises a communications adapter for format conversion between a link data format for the external port, for data communications over a link connected to the external port in use, and a switch data format for said data communications across the switching node.
4. (currently amended) An interface module ~~according to claim 1~~ for connecting a data communications link to a switch node, comprising a plurality of other interface modules, of a data communications network, the interface module comprising:

CH919980050US1

-2-

an external port for connection to the data communications link;

a plurality of internal ports for connection to respective internal ports of said other interface modules of the switching node;

a link interface, connected to the external port, for processing inbound data for forwarding across the switching node and outbound data for transmission over said data communications link;

a switch circuit, connected between the link interface and the internal ports of the interface module, for transmission of data between the internal ports of the interface module and between the internal ports and the link interface; and

a controller for controlling routing of data via the internal ports of the interface module in accordance with an intra-node routing protocol governing routing of data across an intra-node network of interconnected interface modules of the switching node,

wherein the link interface comprises an external routing component for adding external routing information to data to be forwarded across the switching node in dependence on a destination address indicated by the data to be

CH919980050US1

-3-

forwarded, said external routing information indicating an external port of one of [[\_]] said other interface modules of the switching node to which the data is to be forwarded.

5. (currently amended) An interface module ~~according to claim 1~~ for connecting a data communications link to a switch node, comprising a plurality of other interface modules, of a data communications network, the interface module comprising:

an external port for connection to the data communications link;

a plurality of internal ports for connection to respective internal ports of said other interface modules of the switching node;

a link interface, connected to the external port, for processing inbound data for forwarding across the switching node and outbound data for transmission over said data communications link;

a switch circuit, connected between the link interface and the internal ports of the interface module, for transmission of data between the internal ports of the interface module and between the internal ports and the link interface; and

CH919980050US1

-4-

a controller for controlling routing of data via the internal ports of the interface module in accordance with an intra-node routing protocol governing routing of data across an intra-node network of interconnected interface modules of the switching node,

wherein the controller comprises an internal routing manager for maintaining topology information indicative of the topology of the intra-node network, and an internal routing component for selecting, in dependence on said topology information, the an internal port of the interface module for forwarding of data across the intra-node network in accordance with the intra-node routing protocol.

6. (currently amended) ~~An~~ The interface module according to claim 2 including at least one of the plurality of external ports ~~port~~ which is connected or connectable directly to the switch circuit.

7. (currently amended) An interface card comprising an interface module for connecting a data communications link to a switch node, comprising a plurality of other ~~such~~ interface modules, of a data communications network, the interface module comprising:

CH919980050US1

-5-

an external port for connection to ~~[[a]]~~ the data communications link;

a plurality of internal ports for connection to respective internal ports of said other interface modules of the switching node;

a link interface, connected to the external port, for processing inbound data for forwarding across the switching node and outbound data for transmission over said data communications link;

a switch circuit, connected between the link interface and the internal ports of the interface module, for transmission of data between the internal ports of the interface module and between the internal ports and the link interface; and

a controller for controlling routing of data via the internal ports of the interface module in accordance with an intra-node routing protocol governing routing of data across ~~the~~ an intra-node network of interconnected interface modules of the switching node;

wherein the link interface comprises an external routing component for adding external routing information to data to be forwarded across the switching node in dependence on a destination address indicated by the data to be

CH919980050US1

-6-

forwarded, said external routing information indicating an external port of one of said other interface modules of the switching node to which the data is to be forwarded.

8. (currently amended) A switching node for a data communications network, the switching node comprising a plurality of interface modules for connection data communications links to the switching node wherein:

each interface module comprises at least one external port for connection to the data communications link, a plurality of internal ports, a link interface which is connected to said at least one external port, for processing inbound data for forwarding across the switching node and outbound data for transmission over said data communications link, a switch circuit, which is connected between the link interface and the internal ports of the interface module, for transmission of data between the internal ports of the interface module and between the internal ports and the link interface, and a controller for controlling routing of data via the internal ports of the interface module, wherein the link interface comprises an external routing component for adding external routing information to data to be forwarded across the switching node in dependence on a

CH919980050US1

-7-

destination address indicated by the data to be forwarded,  
said external routing information indicating an external  
port of one of said other interface modules of the switching  
node to which the data is to be forwarded;

at least some of the internal ports of said each interface module are connected to respective internal ports of one at least one other said each interface module whereby the interface modules are connected in an intra-node network;

and wherein the controller of each interface module is arranged to control said routing of data in accordance with an intra-node routing protocol governing routing of data across said intra-node network.

9. (original) A switching node according to claim 8 wherein:

the switching node includes at least one switching module comprising a plurality of internal ports, a switch circuit for transmission of data between the internal ports of the switching modules, and a controller for controlling routing of data via the internal ports of the switching module in accordance with said intra-node routing protocol; and

CH919980050US1

-8-

at least some of the internal ports of the switching module are connected to respective internal ports of one at least one said interface module, whereby the switching module is connected in said intra-node network.

10. (currently amended) A switching node according to claim 9 including a plurality of said switching modules, wherein at least some of the internal ports of each switching module are connected to respective internal ports of a plurality of the interface modules and switching modules in the intra-node network.

11. (currently amended) A switching node ~~according to claim 10~~, for a data communications network, the switching node comprising a plurality of interface modules for connection data communications links to the switching node wherein:

each interface module comprises at least one external port for connection to the data communications link, a plurality of internal ports, a link interface which is connected to said at least one external port, for processing inbound data for forwarding across the switching node and outbound data for transmission over said data communications link, a switch circuit, which is connected between the link

CE919980050US1

-9-



interface and the internal ports of the interface module, for transmission of data between the internal ports of the interface module and between the internal ports and the link interface, and a controller for controlling routing of data via the internal ports of the interface module;

at least some of the internal ports of said each interface module are connected to respective internal ports of one at least one other said each interface module whereby the interface modules are connected in an intra-node network;

and wherein the controller of each interface module is arranged to control said routing of data in accordance with an intra-node routing protocol governing routing of data across said intra-node network;

wherein the switching node includes at least one switching module comprising a plurality of internal ports, a switch circuit for transmission of data between the internal ports of the switching modules, and a controller for controlling routing of data via the internal ports of the switching module in accordance with said intra-node routing protocol; and

at least some of the internal ports of the switching module are connected to respective internal ports of one at

CH919980050US1

-10-

least one said interface module, whereby the switching module is connected in said intra-node network;

further including a plurality of said switching modules, wherein at least some of the internal ports of each switching module are connected to respective internal ports of a plurality of the interface modules and switching modules in the intra-node network; and

wherein the switching circuit of said each interface module comprises an electrical switch, and the switching circuit of the switching module comprises an optical switch.

12. (currently amended) A data communications network comprising at least ~~one~~ the switching node according to claim 8, and a plurality of data communications links, connected to respective external ports of ~~[[a]]~~ the plurality of the interface modules of the switching node, at least one of said data communications links connecting at least one network device to the switching node.

13. (new) The interface module according to claim 5, including a plurality of external ports for connection to respective data communications links, wherein the link

CH919980050US1

-11-

interface is connected to each of the external ports for processing said inbound and outbound data.

14. (new) The interface module according to claim 5, wherein the link interface comprises a communications adapter for format conversion between a link data format for the external port, for data communications over a link connected to the external port in use, and a switch data format for said data communications across the switching node.

15. (new) The interface module according to claim 13 including at least one of the plurality of external ports which is connected or connectable directly to the switch circuit.

16. (new) An interface card comprising an interface module for connecting a data communications link to a switch node, comprising a plurality of other interface modules, of a data communications network, the interface module comprising:

an external port for connection to the data communications link;

a plurality of internal ports for connection to respective internal ports of said other interface modules of the switching node;

a link interface, connected to the external port, for processing inbound data for forwarding across the switching node and outbound data for transmission over said data communications link;

a switch circuit, connected between the link interface and the internal ports of the interface module, for transmission of data between the internal ports of the interface module and between the internal ports and the link interface; and

a controller for controlling routing of data via the internal ports of the interface module in accordance with an intra-node routing protocol governing routing of data across an intra-node network of interconnected interface modules of the switching node;

wherein the controller comprises an internal routing manager for maintaining topology information indicative of the topology of the intra-node network, and an internal routing component for selecting, in dependence on said topology information, the internal port of the interface

CH919980050US1

-13-

module for forwarding of data across the intra-node network.

17. (currently amended) A switching node for a data communications network, the switching node comprising a plurality of interface modules for connection data communications links to the switching node wherein:

each interface module comprises at least one external port for connection to the data communications link, a plurality of internal ports, a link interface which is connected to said at least one external port, for processing inbound data for forwarding across the switching node and outbound data for transmission over said data communications link, a switch circuit, which is connected between the link interface and the internal ports of the interface module, for transmission of data between the internal ports of the interface module and between the internal ports and the link interface, and a controller for controlling routing of data via the internal ports of the interface module, wherein the controller comprises an internal routing manager for maintaining topology information indicative of the topology of the intra-node network, and an internal routing component for selecting, in dependence on said topology information,

CH919980050US1

-14-

the internal port of the interface module for forwarding of data across the intra-node network;

at least some of the internal ports of said each interface module are connected to respective internal ports of one at least one other said each interface module whereby the interface modules are connected in an intra-node network;

and wherein the controller of each interface module is arranged to control said routing of data in accordance with an intra-node routing protocol governing routing of data across said intra-node network.

CH919980050US1

-15-